

LISTING OF CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) An apparatus for measuring strain, comprising:

a semiconductor film and an adjacent metal shunt forming a first interface between the semiconductor film and the adjacent metal shunt, the semiconductor film and metal shunt being deposited on a substrate;

wherein a strain induced at least at the first interface in a direction that is parallel to a length of the first interface changes a resistance of the semiconductor film;

the first interface is located vertically to the substrate and along adjacent side walls of the semiconductor film and the adjacent metal shunt; and

a plurality of metal contacts forming a plurality of secondary interfaces with the semiconductor film on an opposite side of the metal shunt thereby allowing detection of the change in the resistance of the semiconductor film, the plurality of secondary interfaces being resistive interfaces.

2. (Original) The apparatus of claim 1, wherein: the induced strain comprises a tensile strain.

3. (Original) The apparatus of claim 1, wherein: the induced strain comprises a compressive strain.

4. (Previously Presented) The apparatus of claim 1, wherein: the first interface comprises a resistive interface.

5. (Previously Presented) The apparatus of claim 1, wherein: the first interface comprises a Schottky interface.

6. (Original) The apparatus of claim 1, wherein: the semiconductor film comprises an n-type thin film with a thickness of approximately one to ten microns.
7. (Original) The apparatus of claim 1, wherein: the semiconductor film comprises Indium Antimonide.
8. (Original) The apparatus of claim 1, wherein: the metal shunt comprises gold.
9. (Original) The apparatus of claim 1, further comprising: a flexible membrane on which the semiconductor film and metal shunt are carried.
10. (Original) The apparatus of claim 9, further comprising: a frame to which the flexible membrane is attached.
11. (Original) The apparatus of claim 1, further comprising: a semi-insulating substrate on which the semiconductor film and metal shunt are grown.
12. (Previously Presented) The apparatus of claim 1, wherein: a plate structure is formed by the semiconductor film and the metal shunt in which the semiconductor film and metal shunt extend laterally away from the first interface.
13. (Previously Amended) The apparatus of claim 1, further comprising: a control for obtaining a measurement indicative of the change in the resistance of the interface by applying a constant current to the semiconductor film through a first subset of metal contacts of the plurality of metal contacts to induce a voltage therein, and measuring a change in the voltage that is indicative of the change in the resistance, the measurement being performed across a second subset of metal contacts of the plurality of metal contacts.
14. (Original) The apparatus of claim 13, wherein: the control determines at least one of a pressure and temperature based on the obtained measurement.

15. (Original) The apparatus of claim 14, further comprising: a memory for storing calibration data; wherein the control accesses the calibration data for use in determining the at least one of a pressure and temperature.

16. (Original) The apparatus of claim 1, wherein: the strain is induced in a direction substantially parallel to a length of the interface.

17. (Previously Presented) The apparatus of claim 12, wherein: heights of the semiconductor film and metal shunt in the plate structure are substantially equal.

18. (Currently Amended) A method for measuring strain, comprising:

applying a constant current to a hybrid semiconductor device to induce a voltage, the hybrid semiconductor device comprising a semiconductor film and an adjacent metal shunt forming ~~[[an]]~~ a first interface between the semiconductor film and the adjacent metal shunt, the semiconductor film and metal shunt being deposited on a substrate, and the first interface being located vertically to the substrate and along adjacent side walls of the semiconductor film and the adjacent metal shunt, ~~to induce a voltage in the hybrid semiconductor device~~ and a plurality of metal contacts forming a plurality of secondary interfaces with the semiconductor film on an opposite side of the metal shunt thereby allowing detection of the change in the resistance of the semiconductor film, the plurality of secondary interfaces being resistive interfaces;

inducing a strain at least at the first interface in a direction parallel to a length of the first interface to change a resistance of the semiconductor film; and

measuring a change in the induced voltage that is indicative of the change in the resistance.

Claims 19-22. (Cancelled)

23. (Previously Presented) The apparatus of claim 1, further comprising: contacts arranged on the semiconductor film for applying a current to the semiconductor film and the adjacent metal shunt, and for measuring a change in an induced voltage that is indicative of a change in a resistance at the interface.

24. (Previously Presented) The apparatus of claim 23, wherein: the contacts are arranged on a side wall of the semiconductor film opposite to the interface.

25. (Previously Presented) The apparatus of claim 11, wherein: the semiconductor film comprises a mesa grown on the semi-insulating substrate.

26. (Previously Presented) The apparatus of claim 12, wherein: the plate structure has a filling factor of approximately 9/16.

27. (Previously Presented) The apparatus of claim 1, wherein: a filling factor is approximately 9/16.

28. (Currently Amended) An apparatus for measuring strain, comprising:

a semiconductor film and an adjacent metal shunt forming ~~[[an]]~~ a first interface between the semiconductor film and the adjacent metal shunt, the semiconductor film and metal shunt being deposited on a substrate, and a plurality of metal contacts forming a plurality of secondary interfaces with the semiconductor film on an opposite side of the metal shunt thereby allowing detection of the change in the resistance of the semiconductor film, the plurality of secondary interfaces being resistive interfaces;

wherein a strain induced at least at the first interface in a direction parallel to a length of the first interface changes a resistance of the semiconductor film; and

the semiconductor film comprises Indium Antimonide.

29. (Currently Amended) An apparatus for measuring strain, comprising:

a semiconductor film and an adjacent metal shunt forming [[an]] a first interface between the semiconductor film and the adjacent metal shunt, the semiconductor film and metal shunt being deposited on a substrate, and a plurality of metal contacts forming a plurality of secondary interfaces with the semiconductor film on an opposite side of the metal shunt thereby allowing detection of the change in the resistance of the semiconductor film, the plurality of secondary interfaces being resistive interfaces;

wherein a strain induced at least at the first interface in a direction parallel to a length of the first interface changes a resistance of the semiconductor film; and

a plate structure is formed by the semiconductor film and the metal shunt in which the semiconductor film and metal shunt extend laterally away from the first interface.

30. (Previously Presented) An apparatus for measuring strain, comprising:

a semiconductor film and an adjacent metal shunt forming a first interface between the semiconductor film and the adjacent metal shunt, the semiconductor film and metal shunt being deposited on a substrate;

wherein a strain induced at least at the first interface in a direction parallel to a length of the first interface changes a resistance of the semiconductor film; and

a plurality of metal contacts forming a plurality of secondary interfaces with the semiconductor film on an opposite side of the metal shunt for applying a current to the semiconductor film and the adjacent metal shunt, and for measuring a change in an induced voltage that is indicative of a change in a resistance at the first interface.

31. (Previously Presented) The apparatus of claim 30, wherein: the contacts are arranged on a side wall of the semiconductor film opposite to the first interface.

32. (Currently Amended) An apparatus for measuring strain, comprising:

a semiconductor film and an adjacent metal shunt forming ~~[[an]]~~ a first interface between the semiconductor film and the adjacent metal shunt, the semiconductor film comprises a mesa grown on a semi-insulating substrate, and a plurality of metal contacts forming a plurality of secondary interfaces with the semiconductor film on an opposite side of the metal shunt thereby allowing detection of the change in the resistance of the semiconductor film, the plurality of secondary interfaces being resistive interfaces; and

wherein a strain induced at least at the interface in a direction parallel to a length of the interface changes a resistance of the semiconductor film.

33. (Currently Amended) An apparatus for measuring strain, comprising:

a semiconductor film and an adjacent metal shunt forming ~~[[an]]~~ a first interface between the semiconductor film and the adjacent metal shunt, the semiconductor film and metal shunt being deposited on a substrate, and a plurality of metal contacts forming a plurality of secondary interfaces with the semiconductor film on an opposite side of the metal shunt thereby allowing detection of the change in the resistance of the semiconductor film, the plurality of secondary interfaces being resistive interfaces; and

a filling factor of approximately 9/16;

wherein a strain induced at least at the first interface in a direction parallel to a length of the interface changes a resistance of the semiconductor film~~[[; and]]~~

~~a filling factor of approximately 9/16.~~

34-38 (Canceled)